Saw Diagnosis & Tuning

Excerpts from the Messageboards

Dan Donaldson. Try doing a crosscut on a fairly wide board using the miter gauge and see if it is clean. Clamp it to the gauge so that it cannot shift as it goes through the blade. If that is clean with no burning or saw marks, then it looks like the blade and miter groove are aligned. If not, then you will need to align the slot and the blade. If it is clean, then I would tend to suspect the fence alignment.

Howard Acheson. Here is the low tech, low cost way to align a tablesaw that I learned maybe forty years ago and teach to my students now.

Make 3/4 x 3/4 x 12" hardwood stick. Drill a hole somewhat centered in one end and insert a brass #8 x 1" round head wood screw about half way. UNPLUG THE SAW. Raise the blade completely up. Clamp this board in your miter gauge (if you determine that there is some slop in your slot to miter gauge, use a playing card to take up the slop) so the screw head just about touches the blade at the front. Now rotate the blade by hand and determine which tooth is the closest. Adjust the screw in or out until it just touches this tooth. Mark this tooth. Rotate the blade so the tooth is now at the back of the table and move the miter gauge/stick assembly to the back and see if it touches the marked tooth to the same extent. If it doesn't, adjust the trunnion (if a contractor saw) or the tabletop (if a cabinet saw) until it does.

For a contractor saw, first use a small c-clamp on the rear trunnion and cradle to keep the assembly from moving. Then loosen the two rear trunnion bolts and use a stick to tap the trunnion until the blade and screw lightly touch. The blade does not move directly around the center so you will need to repeatedly go back to the front of the blade, readjust the screw, and then again measure the back. Be sure to check after tightening the trunnion as the trunnion frequently moves when being tightened.

The same adjustment gauge can be used to set the fence parallel to the miter slot. Slide the miter gauge to the front of the table and move the fence over to the screw head and insert a playing card between the screw head and the fence just so you can move the card as it touches both the fence and the screw head. Now move the miter gauge to the back of the table and see if you have the same feel when you insert the card. I like my fence absolutely parallel--if you want to have a slight opening to the fence, you can easily estimate the opening by adding a thickness of paper to the card.

I always show my students with a dial gauge that their adjustments are within .001 - .002. You can also use the same gauge to measure blade run-out by using a $5.00 feeler gauge. Finally, after you are satisfied with the above adjustments, check the position of the splitter to make sure it is exactly in line with the blade. Bottom line, there is no need to spend more than the $0.05 for the brass screw.

Also, for an excellent source for cleaning up, maintaining and using your saw, Kelly Mahler's new book "Table Saw Book" is available.

George in Columbia, MO. I figured out I needed to loosen the trunnion bolts, and got the blade aligned, but when I tightened the bolts back up the blade became unaligned. I tried to use shims and even tried clamps, but every time I tighten the bolts the blade becomes unaligned. The back two bolts are easily accessible, but the front two are very hard to reach, so this has been very frustrating. How do I tighten the bolts without the blade moving??? Thanks again.

Bill in Austin, TX. I experienced the same thing you're going through for quite a while. The bolts have a "memory" when you tighten them down. I'd heard about the PALS alignment system that Woodcraft sells but figured it was just a gimmick gizmo. Finally I got frustrated enough that I took a gamble and broke down and paid the 20 bucks. Well it works perfectly. You get the saw close and then tighten down the front bolts (the hard to reach ones) and then fine tune the back with two little hex screws that push on the trunnion. You can check it out on woodcraft's site.

Bartee Lamar. I have 20+ YO Craftsmans TS. I bought the PALS alignment system Dan mentions above. It is the only way you are going to get the alignment correct. Be careful not to loosen the bolts too much. You must do these alignments with the motor and belt attached. The weight of the motor must be considered. I also purchased the Solid Alignment plate that replaces you blade. I tried to do the alignment with the blade but I just could not get it right.

Once you get the alignment and start to tighten the bolts, check again. IT WILL MOVE !! This is a very slow process. But once you get the right, the difference is amazing. After you do the blade, work on the fence. After all this you will have a great alignment kit, you will not need for a long time.

Tony - Memphis. I got the PALs, but wasn't as thrilled with them as most folks. I did manage to get the thing lined up pretty close. Trouble with a CS is that when you put the belt back on, it will move a hair. When you are looking at a few thou, it matters. But, it just took some trial and error to finally get it within a couple or three thousandths. It cuts really nice anyway. Don't forget to reset your fence after you adjust the alignment! Also, there will be error - nothing is perfect. Make sure you force the error to the safe side. Delta could make this process much easier for a couple of bucks! They probably don't think folks will fool with them much (it IS a contractor's saw anyway). Good thing is, it's not something we have to do often.

Bruce in MN. I have an old Delta contractor's saw, a 9" very similar to your 10". The way I set mine is to snug the trunnion mounting bolts but not tighten them and then tap the whole shebang into position. It takes some patience and a little luck, but you'll get it. You might find it easier to have the front ones right on and then work with the rear ones. You're only talking about a couple thousandths anyway so mushing it around isn't going to hurt.

William Duffield. It's not the "memory" of the bolts. That's what I thought, so I replaced the stock bolts with new ones, hardened, with flat washers and lock

washers. It still moved when I tightened it down. To get at the front trunnion bolts on my Delta CS, I use a ratchet socket wrench with about 15" of extensions. That way, you rotate the wrench below the bottom of the box, where you have lots of room. Use a high quality socket. If you round off the corners of the bolt, you'll have to take the table off of the box and jack it up to get a pair of vise grips on the bolt to loosen it.

Delta's Recommended Procedure. http://www.deltawoodworking.com

Randy in Dartmouth. Two lines that are not parallel cannot exist in the same plane. As applied to the trunnion rods, therefore, a flat surface cannot rest on both rods over their length if the rods are skewed relative to one another. The rods are about 24" long and connect the front and rear trunnions. They are about 3/4" in diameter. There are large nuts on each end to tighten the whole assembly together. The motor bracket hangs off the back end of them.